

Getting a feel for the phenomenon: Activity 3 -- Gas: Free and Fast

Exploring Solid, Liquid, Gas, and State Change

Goals & Rationale

- Help students experience how atoms/molecules behave in solids, liquids, and gases -- rather than only see diagrams
- Use students' bodies and movement to eternalize and explore abstract scientific ideas. This can make invisible phenomena (e.g., molecular motion, spacing, energy) accessible
- Support multiple ways of knowing (embodied, social, verbal, conceptual) -- serving diverse learners and offering culturally sustaining, engaging science learning
- Use Move About It cards to guide embodied inquiry, and encourage flexibility, creativity, and student-driven exploration.

Tips and Considerations for Implementation

- Provide plenty of physical space and clear norms for movement to ensure safety
- Combine embodied activities with reflection -- discussion, drawing, linking to diagrams/simulations -- to help students connect body experiences to scientific concepts
- Use multiple modalities (movement, talk, drawing, simulation) to support diverse learners and deepen understanding
- Consider rhythm or music (for fluid transitions or warm-ups), but ensure that movement goals remain clear
- Invite students to invent their own gestures, motions, or interpretations -- this honors student creativity, identity, and agency
- Use the cards to help students expand the ways they explore movement ideas in the space

Activity 3 -- Gas: Free and Fast

Prompt: "You are a gas -- particles are widely spaced and move quickly in all directions."

Use this activity to introduce the structure and properties of gases. Gases are made up of particles that are far apart with very weak forces, moving rapidly and randomly. Particles are in constant, random motion, colliding with each other and with container walls. Gases have no definite shape or volume. They expand to fill any container.

Setup: Have students stand up in a space where they have room to move openly.

Movement Instructions:

- Have students spread out widely across the space, ensuring lots of room between each other.
- Describe the way that particles move in a liquid and ask students to become liquid particles. (*Facilitators may have to spend time reflecting and practicing safe ways to "collide" in the space with students prior to this prompt.*)
- Encourage students to move freely -- walking, drifting, floating, lightly bouncing. (*Facilitator can use Move About It Cards to encourage students to explore different types of energetic movements, changes in direction and speed, different levels*)

Facilitator Notes / Variations:

- Use as a contrast after solid and liquids cards. Ask ""How does it feel to have so much space? To move so freely?"
- Variation: Have music playing. Play different songs during the "gas" phase. Movement can respond to rhythm and energy.
- Reflection: "What does wide spacing remind you of? What everyday phenomena are like this? (e.g., air, steam)?"